

(No Model.)

2 Sheets—Sheet 1.

T. J. PERRIN.

TELEPHONE TRANSMITTER AND RELAY.

No. 324,726.

Patented Aug. 18, 1885.

Fig. 1.

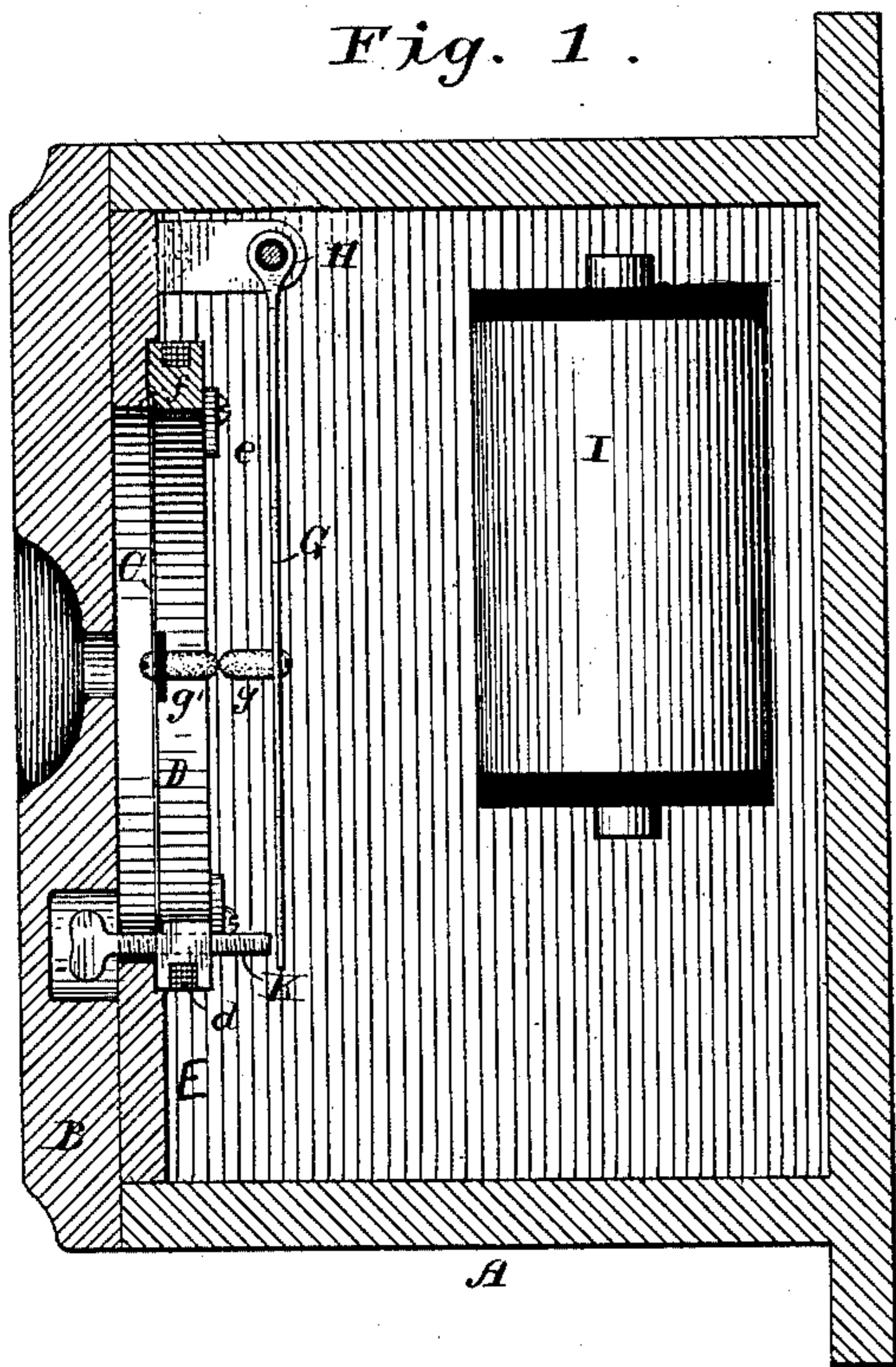


Fig. 2.

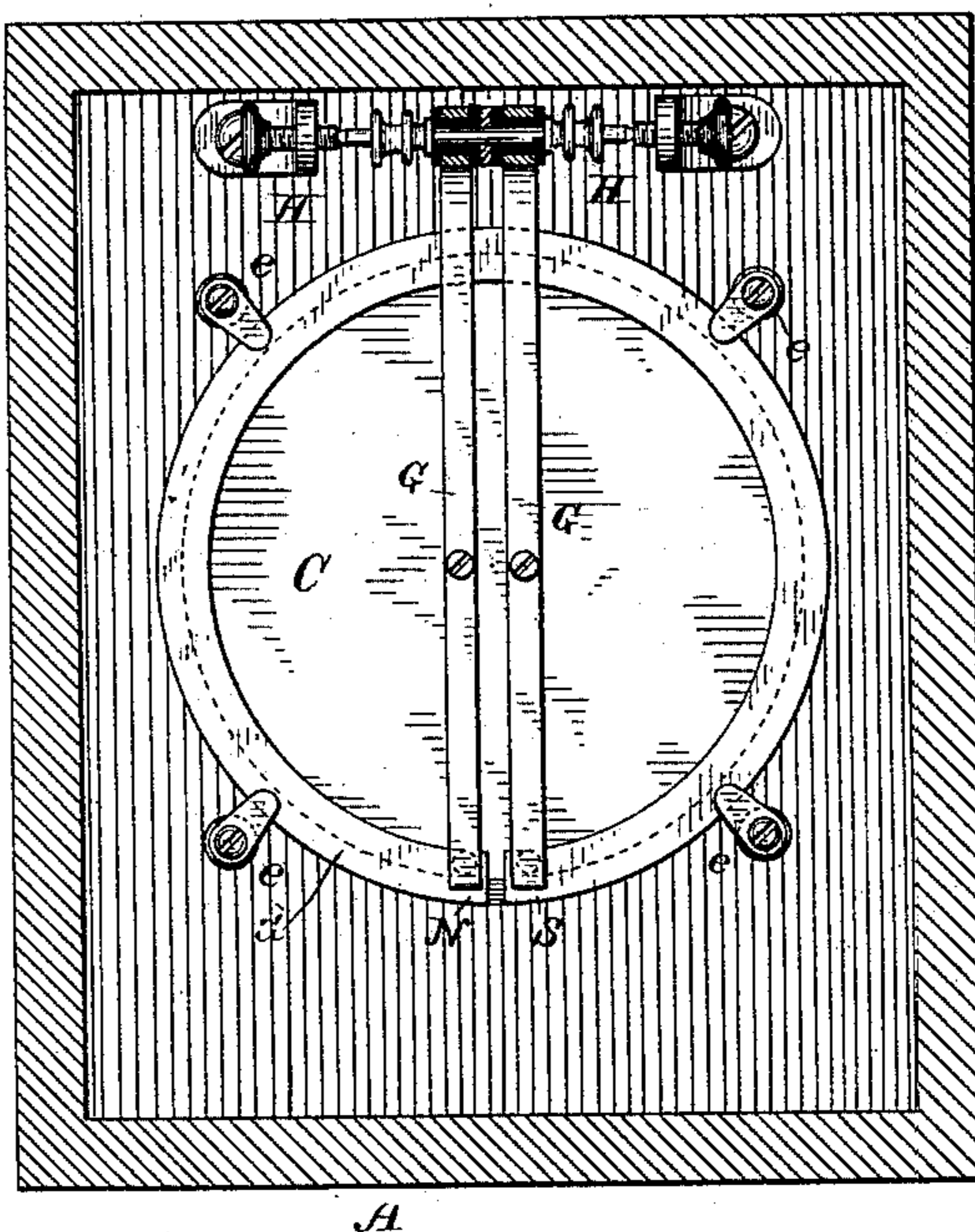
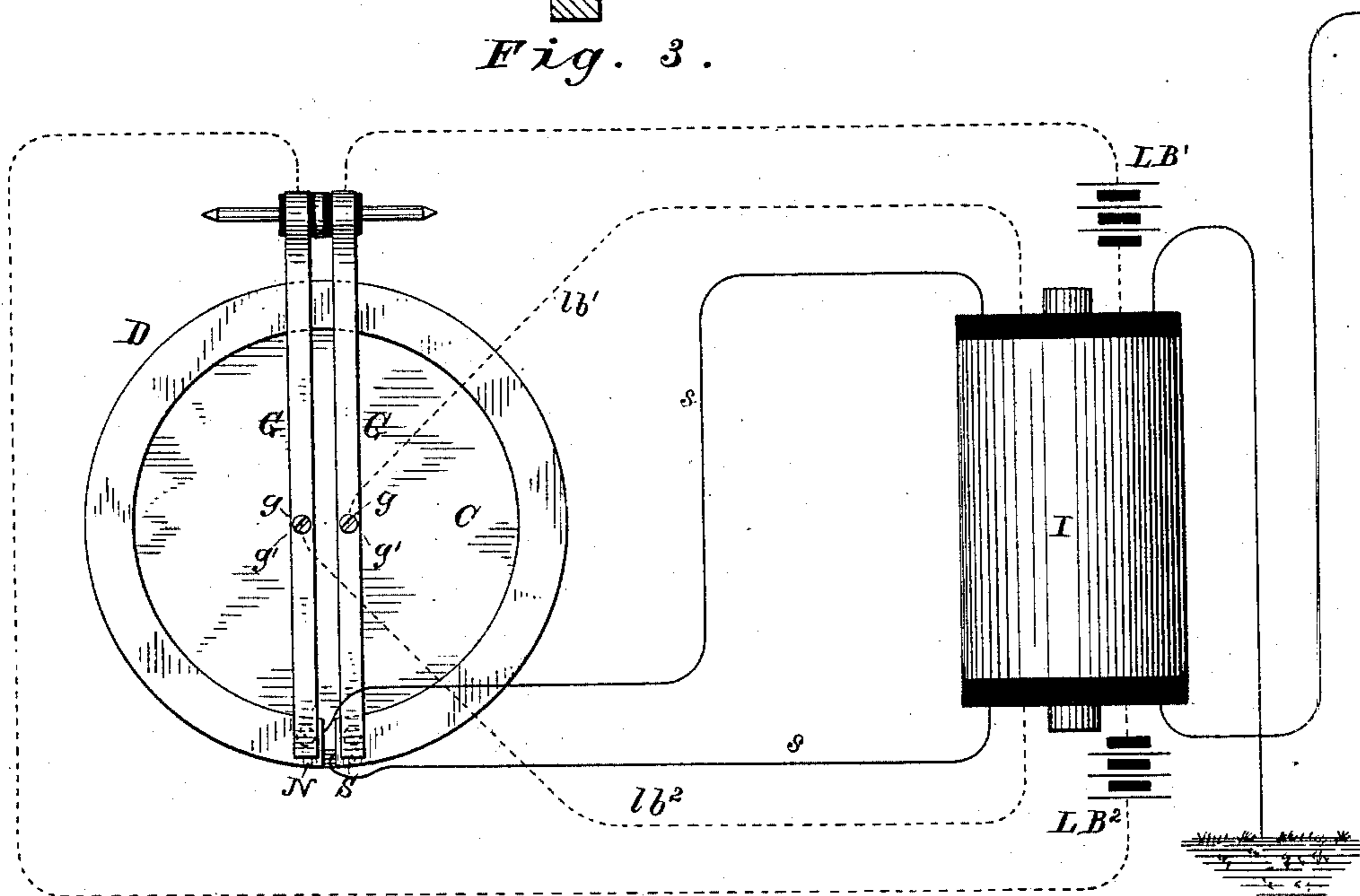


Fig. 3.



WITNESSES

Ed. C. Newman.
Ed. C. Newman.

INVENTOR

Thomas J. Perrin

By his Attorneys

Walden Hopkins & Poyton

(No Model.)

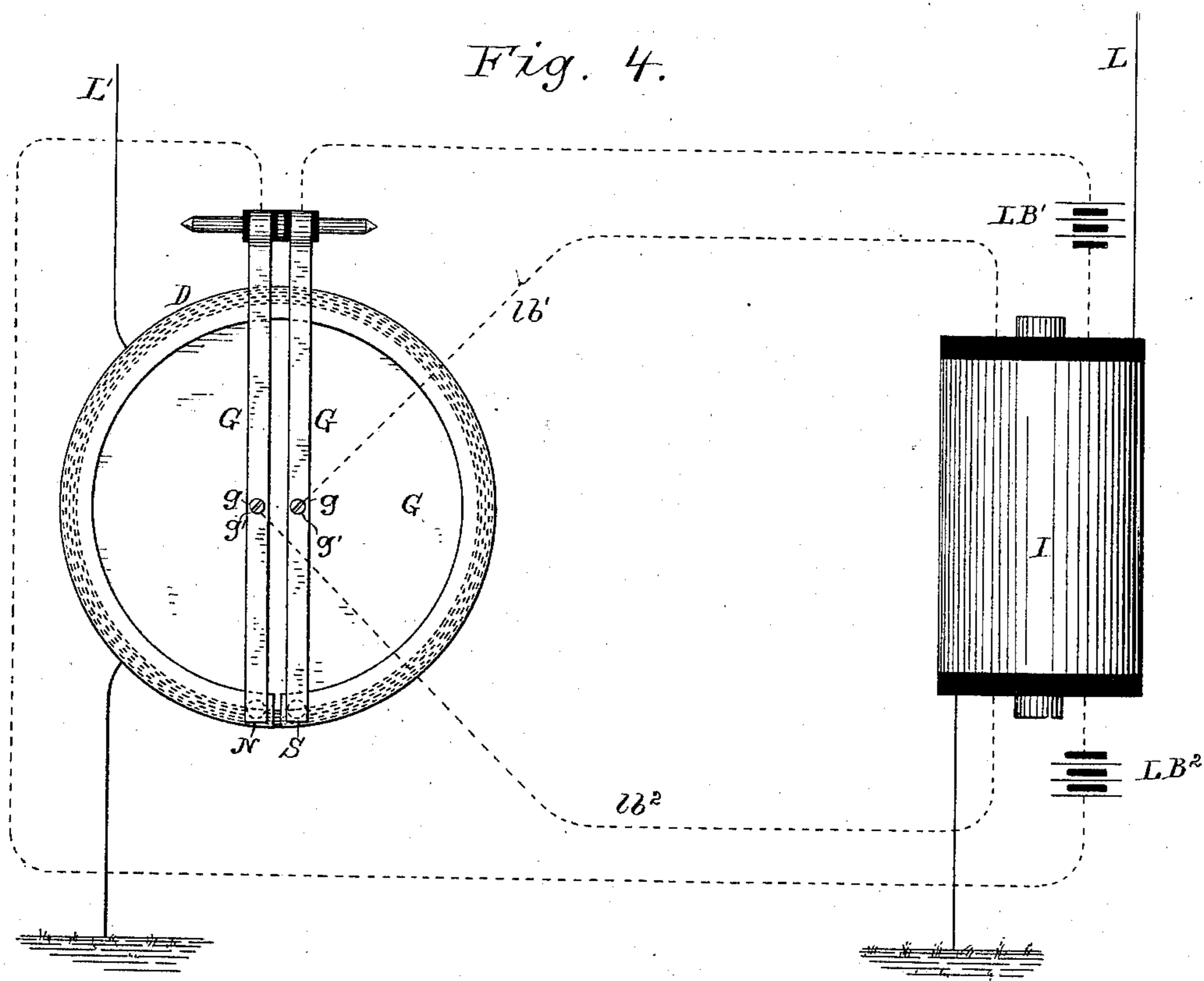
2 Sheets—Sheet 2.

T. J. PERRIN.

TELEPHONE TRANSMITTER AND RELAY.

No. 324,726.

Patented Aug. 18, 1885.



WITNESSES

Ed. A. Newman,
Al. C. Newman.

INVENTOR

Thomas J. Perrin

By *his* Attorneys

Caldwell, Perkins & Peck,

UNITED STATES PATENT OFFICE.

THOMAS J. PERRIN, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE NATIONAL IMPROVED TELEPHONE COMPANY, OF NEW ORLEANS, LOUISIANA.

TELEPHONE TRANSMITTER AND RELAY.

SPECIFICATION forming part of Letters Patent No. 324,726, dated August 18, 1885.

Application filed November 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. PERRIN, of Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Electric Telephone Transmitters and Relays, of which the following is a specification.

My invention relates to certain improvements by which the integrity of the contact between the transmitting-electrodes is always maintained and the disagreeable rattle or break which sometimes occurs in transmitting-telephones avoided. The instrument is particular well adapted to the use of two primary circuits, each of which includes an independent pair of transmitting-electrodes. Under such an arrangement both primaries may be wound upon the same induction-coil in connection with two independent windings of a continuous secondary. Such an arrangement of contacts and winding of induction-coil is shown in my Patent No. 303,948, granted to me August 19, 1884, and specific description and detailed illustration are therefore unnecessary in this case. The instrument is also adapted for use as a telephonic repeater, all of which more fully appears below.

In the accompanying drawings, Figure 1 is a transverse section through my improved instrument; Fig. 2, a rear view of the diaphragm and electrode supports; Fig. 3, a diagram view illustrating the connections and running of the circuits, and Fig. 4 is a diagram view showing the instrument arranged as a relay or repeater.

A is the ordinary case of the instrument, in which the induction-coil I may be mounted in any suitable way. B is any ordinary door or front plate provided with a suitable sound-aperture, opposite which the diaphragm C may be secured in any suitable well-known way; but is preferably mounted in the following manner:

A bar of magnetic metal, D, preferably a permanent magnet, is bent into the form of a circle, as illustrated, with the opposite poles N S in more or less close proximity to each other, as clearly illustrated in Figs. 2 and 3. This magnet D is seated in an annular depression in one of the partitions or walls E of the casing A, as clearly shown in Fig. 1. It

is held in place therein by several turn-buttons, *e*, mounted on suitable posts. The diaphragm, which is preferably of some non-magnetic material, is preferably mounted in an annular depression, *f*, formed around the edge of the magnet on the side adjacent to the door B of the instrument. The diaphragm is shown as carrying two insulated contact buttons or electrodes, *g'*, against which opposite electrodes *g g* rest in contact. These opposite electrodes are mounted upon hinged or swinging arms G G, which are insulated and independently suspended from a suitable support, H, at the upper part of the instrument. These arms are formed of some magnetic metal, and are of such a length that their lower ends swing just opposite the poles N S of the magnet D, as clearly illustrated.

A soft-iron screw or pole-extension, K, extends from each pole N S, and may be adjusted with relation to the end of the swinging arm G opposite to it, as clearly shown in Fig. 1.

Each pair of electrodes *g g'* is included in an independent primary circuit, as clearly shown in Fig. 3. For instance, the circuit from a local battery, LB', runs to the upper end of the arm G, thence to electrode *g*, opposite electrodes *g'*, and by wire *w'* to the induction-coil. The other circuit is from one pole of the local LB' to the other arm G, electrodes *g g'*, and by wire *w''* to the induction-coil. These primaries are wound alternately with independent layers of the same continuous secondary, as illustrated in my patent above referred to, so that variations of resistance occurring between the two pairs of contacts *g g'* will both act upon a continuous secondary line for telephonic transmission, as is well understood. The attraction of the pole-pieces K upon the ends of the arms G maintains the electrodes *g g'* in contact under magnetic tension, so that they will not separate when a loud sound is uttered in the vicinity of the diaphragm.

The magnet D is formed with a groove, *d*, around its outside edge, as clearly shown in Fig. 1, and in this groove is wound a coil of the secondary line *s*, as will be plain. This winding of the secondary re-enforces the mag-

netism of the permanent magnet D, and therefore intensifies the attraction of the pole-pieces K on the swinging arms G. This winding also adapts the instrument to use as a telephonic relay or repeater, as currents sent over the main line in transmitting from a distant station will traverse the secondary wire s, thus causing variations in the magnetic attraction between the pole-pieces K and the ends of the arms G, which results in variations of contact between the electrodes *g g'*; for, obviously, if the main line, instead of being wound in the induction-coil, be wound directly around the ring D and grounded, and the primary circuit or circuits be caused to act on another main or secondary line, all the conditions of a repeater will exist.

In Fig. 4, L' represents the receiving-line, wound around the ring D and then grounded, and L represents the relayed line, wound in the induction-coil with the primaries.

I have shown two pairs of electrodes in this instrument, and design using them in practice. Of course, however, one of them may be omitted, if desired.

I claim as my invention—

1. The combination of the ring magnet, the

diaphragm, an electrode carried by the diaphragm, a swinging arm, G, the other electrode carried thereby, and an adjustable pole-piece on the ring magnet for acting on said arm.

2. The combination of the ring magnet, the diaphragm, the insulated electrodes carried thereby, the swinging arms G, the opposite electrodes carried by said arms, the adjustable pole-pieces on the ring magnet, an independent primary circuit in which each pair of electrodes is included, and a continuous secondary line on which said primary circuits act.

3. The combination of the ring magnet, the diaphragm, an electrode carried thereby, an opposite electrode, its swinging support, an adjustable pole-piece on the ring magnet for acting on said support, a primary circuit in which said electrodes are included, and a secondary circuit wound around the ring magnet.

In testimony whereof I have hereunto subscribed my name.

THOMAS J. PERRIN.

Witnesses:

JNO. R. JUDEN,
JOHN JUDEN.